

# COVID 19

## Critical Care Protocols

Beaumont Hospital

Updated 06/04/2020



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Protocols compiled by Dr Ruth Aoibheann O’Leary and Dr Bryan Reidy on behalf of the Department of Anaesthesia and Critical Care Medicine, Beaumont Hospital.

Aim of patient management is to optimise length of ICU stay to facilitate admission of maximum possible number of patients during the pandemic

## OVERALL PRINCIPLES

- Use appropriate PPE
- Lung protective ventilation
- Negative fluid balance
- Optimise supportive care
- Deliver interventions in clusters

## ANTI-MICROBIAL TREATMENT

- Prescribe antibiotics for all COVID-19 confirmed/suspected patients
- Send urinary antigens for legionella and pneumococcus
- Stop atypical cover if negative

CONSULT RCSI GUIDELINES

## IMAGING

- CXR: Admission CXR after line and ETT placement. No routine CXRs.
- CT: No clear role

## COVID DIAGNOSTICS

- Nasopharyngeal swab 1st line
- Consider tracheal aspirate if negative swab and high clinical suspicion

## RENAL REPLACEMENT

- Consider in electrolyte disturbance, refractory acidosis and fluid overload
- Discuss with ICU consultant

## SEDATION

- Reduce sedation as oxygenation improves
- Sedation breaks every day
- Use physical restraints if needed to facilitate sedation wean

SEE SEDATION GUIDELINE

## DISEASE COURSE

- May show rapid improvement but beware of deterioration after initial improvement
- Delayed CVS collapse and HLH reported
- If profound septic shock look for alternative diagnosis/additional pathogens

## ROUTINE CARE

- Ensure patients receive all routine ICU care:
  - Mouth care; stress ulcer prophylaxis; DVT prophylaxis
- Maintain enteral nutrition

SEE STANDARD ORDERS & FAST HUGS

## VENTILATION

- Early intubation of all patients admitted to ICU
- Lung protective ventilation: Vt 6ml/kg IBW; Pplat <30cmH2O; pH >7.2; SpO2 >90%; Match PEEP:FiO2 using table
- Permissive hypercapnoea if pH >7.2
- Prone positioning for 16/24hrs for at least 3 consecutive days
- Neuromuscular blockade only if required
- Tidal volumes >6ml/kg acceptable during spontaneous breathing trial

SEE VENTILATION GUIDELINE

## REFRACTORY HYPOXAEMIA

- Early prone ventilation
- Sedation
- Consider nitric oxide
- Consider neuromuscular blockade
- Recruitment manoeuvre
- ECMO referral

SEE PRONING AND VENTILATION GUIDELINES

## VENTILATORY WEAN

- Consider tracheostomy at day 6

## HAEMODYNAMIC MANAGEMENT

- Noradrenaline first line vasopressor
- Once Noradrenaline >25mcg/min consider vasopressin, hydrocortisone 50mg every 6hrs
- Consider ECG, Troponin and TTE if deterioration
- If cardiogenic shock consider inotropes

SEE HAEMODYNAMICS GUIDELINE

# COVID-19 GENERAL PRINCIPLES



RCSI



Version 1.2 05/04/20

## Make sure that every patient gets **Fast Hugs in Bed Please** at least once per day

**F**luid therapy and feeding

**A**nalgesia, antiemetics

**S**edation and Spontaneous breathing trial

**T**hromboprophylaxis

**H**ead up position (30-45 degrees) if intubated

**U**lcer prophylaxis (if not enterally fed)

**G**lucose control (5-10mmol/L)

**S**kin/eye care and suctioning

**I**ndwelling catheters - are they needed?

**N**asogastric tube

**B**owel cares

**E**nvironment (e.g. temperature control, appropriate surroundings in delirium)

**D**e-escalation (e.g. end of life issues, treatments no longer needed)

**P**sychosocial support (for patient, family and staff)

Ref Dr Chris Nickson <https://litfl.com/fast-hugs-in-bed-please/>

Date: \_\_\_\_/\_\_\_\_/\_\_\_\_

Circle Yes/No as appropriate

Insert addressograph here

	Daily Review	Daily Plan
CVS	MAP >65mmHg    Yes    No Sinus rhythm    Yes    No Vasopressors    Yes    No Noradrenaline    ____mcg/min Vasopressin    ____units/hr Adrenaline    ____mcg/min	MAP target:    ____mmHg Vasopressor Wean:    Yes    No Noradrenaline    Yes    No Vasopressin    Yes    No Adrenaline    Yes    No
Resp	Mode    ____ P/F ratio    ____ PEEP    ____ Sputum character    ____ pPeak <30cmH2O    Yes    No X-ray    Yes    No Suitable for wean    Yes    No	SpO2 target    ____% Weaning plan:    Yes    No PSV    Yes    No Wean PEEP    Yes    No Extubation    Yes    No X-ray tomorrow    Yes    No
Neuro	GCS    ____/15 ICP    ____ EVD output    ____ml/hr	ICP target    ____
Sedation	Continuous sedation    Yes    No Sedation break in last 24hrs    Yes    No Physical restraints    Yes    No	Target RASS    ____ Wean sedation    Yes    No Sedation break    Yes    No Mobilise    Yes    No
GI	Enteral nutrition    Yes    No Target feed met    Yes    No Laxatives charted    Yes    No Bowel motions    ____/day Ulcer prophylaxis    Yes    No	NPO    Yes    No Enteral nutrition    Yes    No TPN    Yes    No Prokinetics    Yes    No Change laxatives    Yes    No
Renal	Adequate u/o    Yes    No Balance last 24hrs    ____ CRRT    Yes    No CRRT required    Yes    No	Fluid balance goal for next 24hrs: Negative    ____L Positive    ____L Continue CRRT    Yes    No
Micro	Antimicrobials    Yes    No ____ New culture results    Yes    No ____	Antibx change    Yes    No ____ Septic screen    Yes    No
Invasive Devices	CVC    Yes    No Vascath    Yes    No Date inserted    ____/____ Drain output    ____ml/hr	Change CVC    Yes    No Change Vascath    Yes    No Remove CVC    Yes    No Remove Vascath    Yes    No Remove drain    Yes    No
Skin Care	Pressure areas    Yes    No Surgical wounds    Yes    No	Foam ankle boots    Yes    No Tissue viability nurse consult    Yes    No
Other	DVT prophylaxis    Yes    No Family meeting    Yes    No Consult required    Yes    No	Suitable for D/C    Yes    No Family meeting    Yes    No

Signature and MCN:

## COVID Sampling

Nasopharyngeal Swab - only if not sent prior to admission

Tracheal Aspirate

- if negative swab but high clinical suspicion

## Arterial Blood Gas

30 mins post intubation

4 hourly unless clinical deterioration

## Routine Bloods

Send **once** daily

FBC  
Renal Profile  
Liver Profile (incl AST)  
Coagulation Screen  
CRP

If on propofol:

- CK
- Triglycerides

COVID Patients only

- Ferritin
- Fibrinogen
- D-Dimers
- $\alpha$ 1 antitrypsin
- Cortisol

## Microbiology

Do not send blood cultures at line insertion

Central and Arterial cultures

- Temperature  $>38.3^{\circ}$
- Clinical suspicion of line related infection

If persistently febrile discuss sampling frequency with intensivist and microbiology.

Standard Admission Orders (all patients)			
Drug	Dilution	Concentration	Dose
<b>Noradrenaline</b>	3mg + 47mls 5% Dextrose (50mls) 6mg + 44mls 5% Dextrose (50mls)	60 mcg/ml 120 mcg/ml	
<b>Morphine</b>	60mg + 59 mls 0.9% NaCl (60mls)	1 mg/ml	
<b>Propofol</b>	500mg in 50ml (neat)	10 mg/ml	
<b>Esomeprazole</b>	40 mg / 5ml 0.9% NaCl		40mg OD
<b>Potassium Chloride</b>	Max rate 20mmol/hr		Target K >4mmol/L
<b>Potassium Phosphate</b>			
<b>Magnesium Sulphate</b>			Target Mg >1 mmol/L
<b>Chlorhexidine Mouthwash</b>			1 application QDS
<b>Multivitamin</b>			2 Tablet OD PO/NG
<b>Thiamine</b>			100mg TDS PO/NG

Thromboprophylaxis		
Drug		Dose
<b>Enoxaparin</b>		40mg OD
	> 100 Kg	40mg BD
<b>Heparin</b>	eGFR <30	5000 Units BD
	eGFR <30 + >100kg	7500 Units BD

Additional Orders			
Drug	Dilution	Concentration	Dose
<b>Adrenaline</b>	3mg + 47mls 5% Dextrose (50mls) 6mg + 44mls 5% Dextrose (50mls)	60 mcg/ml 120 mcg/ml	
<b>Vasopressin</b>	20 Units + 49mls 5% Dextrose (50mls)	0.4 Units/ml	0.6 units/hr, max 2.4 units/hr
<b>Dobutamine</b>	500mg + 60mls 0.9% NaCl (100mls)	5mg/ml	2.5 - 10 mcg/kg/min
<b>Midazolam</b>	60mg + 48 mls 0.9% NaCl (60mls)	1mg/ml	
<b>Dexmedetomidine</b>	1000mcg in 250mls 0.9% NaCl	4 mcg/ml	0.2-1.4 mcg/kg/hr
<b>Atracurium</b>	500mg in 50mls (neat)	10mg/ml	Start at 50mg/hr
<b>Cis-atracurium</b>	100mg in 50mls (neat)	2mg/ml	1-3mcg/kg/min
<b>Pancuronium</b>	Neat		60 mcg/kg 4mg
<b>Senna</b>			10mls OD PO
<b>Movicol</b>			1 Sachet TDS PRN PO
<b>Metoclopramide</b>			10mg TDS
<b>Pabrinex</b>	Ampuole 1 + 2 in 100mls 0.9% NaCl		2 ampoules TDS

# INTUBATION



## PPE & Plan

## Prepare Equipment

## Prepare for Difficulty

## Perform Intubation

## Post Procedure

Outside Room

Inside Room

### APPLY PPE

- ☐ Hand Hygiene
- ☐ Gown
- ☐ FFP2 Mask
- ☐ Eye protection
- ☐ Hood or Scrub cap
- ☐ Visor
- ☐ Sterile gloves
- ☐ Non-sterile gloves
- ☐ Buddy Check

### ALLOCATE ROLES

- ☐ Intubator/Team Leader
- ☐ Assistant/Back-up intubator
- ☐ Nurse
- ☐ Runner (outside room)

### DISCUSS AIRWAY PLAN

### CHECK KIT

- ☐ C-Circuit with HME filter
- ☐ Guedel airway
- ☐ Working suction
- ☐ McGrath + disposable blade
- ☐ Stylet
- ☐ Bougie
- ☐ 2 x ETT
- ☐ 20ml syringe
- ☐ iGel
- ☐ Front of neck access kit
- ☐ ETT Ties

### CHECK DRUGS

- ☐ Induction agent
- ☐ Rocuronium
- ☐ Vasopressor infusion
- ☐ Fluids, giving set, 3 way tap
- ☐ Sedation

### WEIGHT

### ALLERGIES

### CAN THE PATIENT BE WOKEN UP IF DIFFICULT AIRWAY?

#### PLAN A

- ☐ mRSI
- ☐ McGrath

#### PLAN B

- ☐ iGEL

#### PLAN C

- ☐ 2-handed BMV

#### PLAN D

- ☐ Front of Neck (Scalpel, bougie, ETT)

### CONFIRM AIRWAY PLAN

### APPLY MONITORS

- ☐ SpO2 probe
- ☐ ECG
- ☐ NIBP/Arterial line
- ☐ Capnography

### CHECK

- ☐ IV Access
- ☐ Ventilator

### AIRWAY ASSESSMENT

### OPTIMISE POSITION

### PREOXYGENATE

- ☐ C-circuit @ 6L/min x 5mins
- ☐ Stop O2 before intubation

### INDUCTION

### PERFORM INTUBATION

- ☐ Inflate cuff
- ☐ Attach ventilator

### PAUSE VENT BEFORE ANY DISCONNECTION

### INSERT

- ☐ Feeding tube
- ☐ CVC +/- Vascath

### DISPOSAL OF CONTAMINATED EQUIPMENT

### DECONTAMINATE McGRATH

### REMOVE PPE

- ☐ Use doffing checklist
- ☐ Buddy system

### HAND HYGIENE

### CXR TO CONFIRM TUBE & LINE POSITION

### TEAM DEBRIEF



## PREPARE

### EQUIPMENT

- ☐ Oropharyngeal airway
- ☐ Nasal Prongs
- ☐ Venturi Mask
- ☐ Yankeur Suction
- ☐ Airway Tray

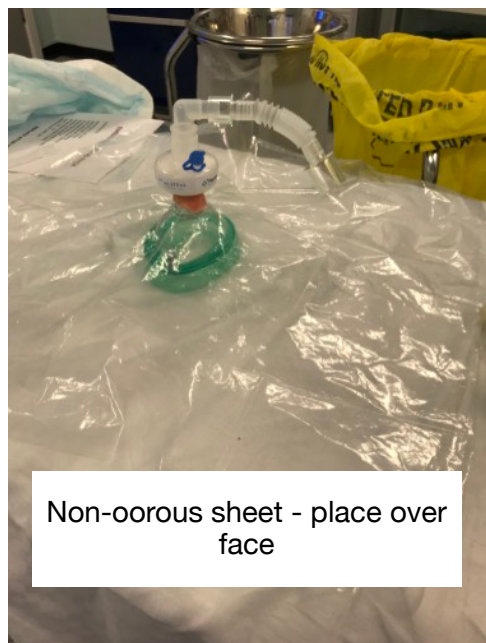
### PATIENT

- ☐ Sit up 30-45°

### PERSONNEL

ICU Doctor  
ICU Nurse

**ALL OTHER STAFF SHOULD  
LEAVE ROOM PRIOR TO  
EXTUBATION**



Non-porous sheet - place over face

**Apply Nasal Cannula  
Do not Commence gas flow**

**Suction oropharynx  
Cover with non-porous sheet to reduce aerosolisation**

**Suction down ETT**

**FiO2 1**

**PRE-EXTUBATION CHECK**  
Fully awake and co-operative  
Spontaneously breathing

**STOP OXYGEN FLOW  
ALERT STAFF  
REMOVE TAPES, DEFLATE CUFF  
EXTUBATE**

**Commence gas flow via nasal prongs @  $\leq 6\text{l/min}$**

**Adequate Ventilation and Oxygenation?**

**Apply Surgical Mask**

## PREPARE

### EQUIPMENT

- ☐ Oropharyngeal airway
- ☐ Nasal Prongs
- ☐ Venturi Mask
- ☐ Yankeur Suction
- ☐ Nerve Stimulator
- ☐ Airway Tray
- ☐ Facemask + HME Filter + splashguard (circuit 2)

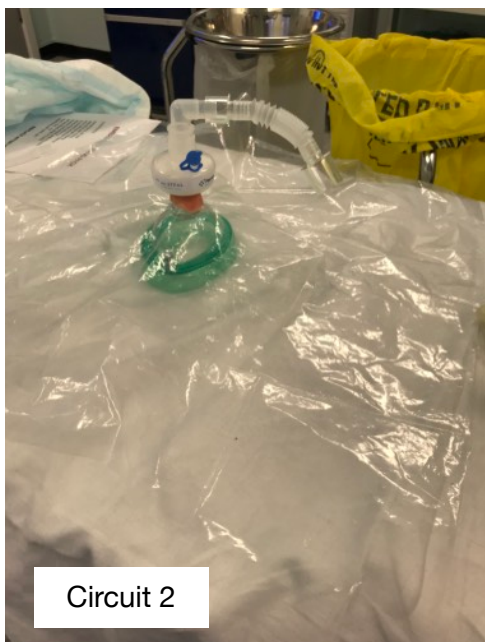
### PATIENT

- ☐ Check TOF
- ☐ Sit up 30-45°

### PERSONNEL

Anaesthetist(s)  
Anaesthesia Nurse

**ALL OTHER STAFF SHOULD  
LEAVE ROOM PRIOR TO  
EXTUBATION**



Circuit 2

Apply Nasal Cannula  
Do not Commence gas flow

Suction oropharynx  
Cover with non-porous sheet to reduce aerosolisation

Insert oropharyngeal airway

Reverse Neuromuscular Blockade

Stop anaesthetic agent, FiO2 1

### PRE-EXTUBATION CHECK

Fully awake and co-operative  
Spontaneously breathing  
OPA removed

**STOP OXYGEN FLOW  
ATTACH CO2 TO CIRCUIT 2  
ALERT STAFF  
REMOVE TAPES, DEFLATE CUFF  
EXTUBATE**

Apply circuit 2, commence gas flow @  $\leq 6\text{L/min}$

Adequate Ventilation and Oxygenation?

Remove Circuit, Apply Surgical Mask

Commence nasal prongs @  $\leq 6\text{L/min}$

Transfer to PACU 10 mins post extubation

## PREPARE

### EQUIPMENT

- ☐ Oropharyngeal airway
- ☐ Nasal Prongs
- ☐ Venturi Mask
- ☐ Yankeur Suction
- ☐ Nerve Stimulator
- ☐ Airway Tray
- ☐ Facemask + HME Filter + splashguard (circuit 2)

### PATIENT

- ☐ Check TOF
- ☐ Sit up 30-45°

### PERSONNEL

Anaesthetist(s)  
Anaesthesia Nurse

**ALL OTHER STAFF SHOULD  
LEAVE ROOM PRIOR TO  
EXTUBATION**



**LEAVE ROOM VACANT FOR  
12 MINS PRIOR TO  
CLEANING**

**Apply Nasal Cannula  
Do not Commence gas flow**

**Suction oropharynx  
Cover with non-porous sheet to reduce aerosolisation**

**Insert oropharyngeal airway**

**Reverse Neuromuscular Blockade**

**Stop anaesthetic agent, FiO2 1**

### PRE-EXTUBATION CHECK

Fully awake and co-operative  
Spontaneously breathing  
OPA removed

**STOP OXYGEN FLOW  
ATTACH CO2 TO CIRCUIT 2  
ALERT STAFF  
REMOVE TAPES, DEFLATE CUFF  
EXTUBATE**

**Apply circuit 2, commence gas flow @  $\leq 6$ l/min**

**Adequate Ventilation and Oxygenation?**

**Remove Circuit, Apply Surgical Mask**

**Commence nasal prongs @  $\leq 6$ L/min**

**Transfer to PACU 12 mins post extubation**

**Hypoxaemic Respiratory Failure P/F <26.6**

## TARGETS

Vt 6mls/kg IBW  
Plat Pressure <30cmH<sub>2</sub>O  
Permissive hypercapnia if  
pH >7.2  
pO<sub>2</sub> >8kPa, SpO<sub>2</sub> ≥90%

**PF RATIO = P<sub>a</sub>O<sub>2</sub>/FiO<sub>2</sub>**

**VCV SIMV / PRVC**  
**Male 430mls Female 350mls**  
**FiO<sub>2</sub> 1**  
**PEEP 10cmH<sub>2</sub>O**  
**Resp rate <35**  
**I:E 1:2**

**CONSIDER POST  
INTUBATION  
RECRUITMENT  
MANOEUVRE**  
(Page 4)

Adjust FiO<sub>2</sub> & PEEP to  
SpO<sub>2</sub> ≥ 90%

ABG at 30 mins  
4 hourly thereafter

**PF ratio <26.6**

Sedate  
Prone  
Consider NMBA\*

**PF ratio >26.6**

Continue ventilation  
settings

**Repeat ABG and reassess ventilation settings 4 hourly**

\*cis-atracurium or atracurium

**Imaging**  
No role for daily CXR  
All imaging requests to be approved by consultant intensivist

## TIDAL VOLUME - 6mls/kg IDEAL BODY WEIGHT

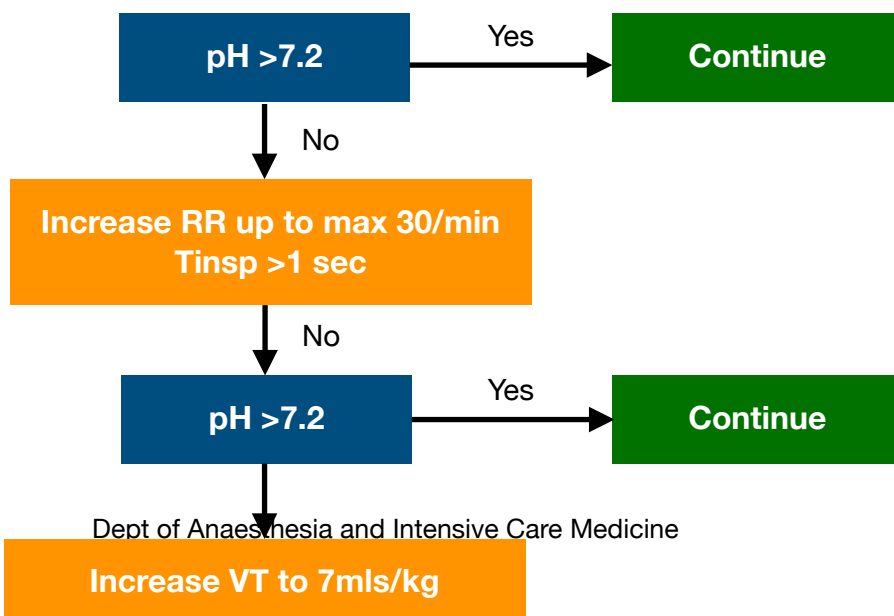
WOMEN		
Height		Tidal Volume (mls)
cm	Feet inches	
153	5'0"	280
155	5'1"	290
158	5'2"	310
161	5'3"	320
163	5'4"	330
166	5'5"	350
168	5'6"	360
171	5'7"	370
173	5'8"	390
176	5'9"	400
178	5'10"	420
181	5'11"	430
183	6'0"	440
45.5 kg + (0.91 × [height cm - 152.4])		
45.5 kg + 2.3 x (height in - 60)		

MEN		
Height		Tidal Volume (mls)
cm	Feet inches	
166	5'5"	370
168	5'6"	390
171	5'7"	400
173	5'8"	420
176	5'9"	430
178	5'10"	440
181	5'11"	460
183	6'0"	470
186	6'1"	480
188	6'2"	500
191	6'3"	510
194	6'4"	530
196	6'5"	540
50 kg + (0.91 × [height cm - 152.4])		
50 kg + 2.3 x (height in - 60)		

## PEEP Tables

FiO <sub>2</sub>	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.9	0.9	0.8	1
PEEP	5	8	10	12	14	14	16	16	18	20	22	22	22-24
Consultant Decision													

## ADJUST RR & MINUTE VENTILATION TO pH



**Worsening Hypoxia/Hypoxaemia  
for 5 mins**

SpO<sub>2</sub> <88%

PaO<sub>2</sub> < 8kPa

**Consider Recruitment  
Manoeuvre**

See page 4

**Intensivist Review  
(when possible)**

**Closed Suction**

**Increase FiO<sub>2</sub> and PEEP**

<b>FiO<sub>2</sub></b>	0.3	0.4	0.4	0.5	0.5	0.6	0.7	0.7	0.8	0.9	0.9	0.8	1
<b>PEEP</b>	5	8	10	12	14	14	16	16	18	20	22	22	22-24

**Increase Inspiratory Time**

I:E 1:<2

**Sedation**

RASS -5

**Repeat ABG @ 30 mins**

**PF ratio <26.6**

**PF ratio < 20**

**Sedate  
Consider prone position**

**Prone  
NMBA infusion\* x 48hours**

**ALL IMAGING REQUESTS MUST BE APPROVED BY CONSULTANT INTENSIVIST**

**Discuss with consultant intensivist before manoeuvre**

**Do not preform recruitment if:**

Haemodynamically unstable  
Arrhythmia  
Pneumothorax  
Brochopleural fistula

Bronchospasm  
Intubated >10 days  
Increased ICP

**Adjust ventilator**

FiO2 1  
Reduce tidal volume 150mls  
Increase pressure alarm to 55cmH2O

**Increase PEEP to 40cmH2O x 40 seconds**

Set Peep and FiO2 as per table  
Reduce alarms to baseline

**Responder**

Increased SpO2, PaO2  
Increased compliance

**Non-responder**

**Repeat in 4-6 hours if indicated**

**No further recruitment**

**Abort manoeuvre if: SpO2 <85% or MAP <50mmHg**

## Disconnection

### In room

Rapid reconnection by nurse/intensivist

All non essential staff to stand as far from patient (if safe to do so)

### On transfer

All non essential staff to stand as far from patient (if safe to do so)

Intensivist to reconnect as soon as possible

### In CT

Intensivist to enter room

Reconnect as soon as possible

All staff to don full PPE - including FFP2 before re-entering room

## High Airway Pressures

1. Check ventilator to patient for kinks/obstructions/filter saturation
2. Closed suction of ETT
3. Check tube position on CXR
4. Check for bronchospasm and treat as needed
5. Check for pneumothorax

## Dyssynchrony

1. Intensivist review when feasible
2. Leak or water in circuit?
3. Closed suction of ETT
4. Adequate sedation?
5. Consider neuromuscular blockade



PREPARE	Ensure PPE correctly applied  Airway and Lines staff to wear visors		Team (6) Airway - Anaesthetist/Intensivist Lines - Anaesthetic/ICU nurse Turning - 4 staff members		
	<b>PREPARE PATIENT</b>  <ul style="list-style-type: none"><li>Slide sheet on bed</li><li>Preoxygenate</li><li>Deep sedation</li><li>Paralyse</li><li>Increase vasopressors</li><li>Lubricate and tape eyes</li><li>Remove gown &amp; ECG dots</li><li>Manual aspirate of NG</li><li>Disconnect and cap art line, remove SpO2 probe</li><li>Arms against body palms in.</li></ul>		<b>PLACE PILLOWS</b>  <ul style="list-style-type: none"><li>1 X SHIN</li><li>1-2 x HIPS (ensure genitals and catheter between legs)</li><li>1-2 x CHEST</li></ul> <b>PLACE SHEET OVER PATIENT</b>  <ul style="list-style-type: none"><li>Ensure 4 corners match</li><li>Burrito roll edges close to patient</li></ul>		<b>CHECK CONNECTIONS</b>  <ul style="list-style-type: none"><li>Ensure tube secured opposite side to ventilator</li><li>Ensure all ventilator connections secure</li><li>Ensure lines free</li></ul>
	REVIEW AND CONFIRM PLAN				
	PROCEDURE	<b>COMMAND READY - BRACE - MOVE</b>  <ul style="list-style-type: none"><li>Move to edge of bed</li><li>Move 1/2 body width off bed</li><li>Move up so head clear of top of bed</li><li>Remove pillow/head-ring</li><li>Ensure lines and tubing free</li></ul> <b>COMMAND READY - BRACE - TURN</b>  <ul style="list-style-type: none"><li>Turn patient 90 degrees</li><li>Turn patient prone</li><li>Turn head into position (face vent on first turn, alternate daily)</li></ul> <b>COMMAND READY - BRACE - MOVE</b>  <ul style="list-style-type: none"><li>Move down bed</li><li>Head-ring/pillow into place</li><li>Check head position, eyes, lines and tubes</li></ul>		<ul style="list-style-type: none"><li>Reattach monitors</li><li>Commence feed once stable</li><li>Check eyes hourly</li><li>Move head ring at least 2 hourly</li></ul> <b>Rotate head at least every 4 hours</b>  <ul style="list-style-type: none"><li>Contact prone team 30mins ahead of time</li><li>Ensure all equipment available</li></ul> <b>Turn supine after 16 hours</b>  <ul style="list-style-type: none"><li>Stop feed 1 hour ahead of time</li><li>Contact prone team 30mins ahead of time</li></ul>	
FOLLOW DOFFING PROTOCOL ON EXIT					

## PREPARE

**Ensure PPE correctly applied**

Airway and Lines staff to wear visors

**Team (6)**

- (1) Airway - Anaesthetist/Intensivist
- (2) Lines - Anaesthetic/ICU nurse
- (3-6) Turning - 4 staff members

**PREPARE PATIENT**

- ☐ Preoxygenate
- ☐ Deep sedation
- ☐ Consider paralysis
- ☐ Increase vasopressors

**CHECK CONNECTIONS**

- ☐ Ensure all ventilator connections secure
- ☐ Ensure lines free

**REVIEW AND CONFIRM PLAN**

## PROCEDURE

**COMMAND READY - BRACE - LIFT**

- ☐ Lift shoulders off bed
- ☐ Remove pillow/headring
- ☐ Ensure lines and tubing free

**COMMAND READY - BRACE - TURN**

- ☐ Turn head into position (1)
- ☐ Ensure lines free

**COMMAND READY - BRACE - REST**

- ☐ Lower shoulders to pillow
- ☐ Head-ring/pillow into place
- ☐ Check head position, eyes, lines and tubes

- ☐ ABG 4 hourly

- ☐ Check eyes hourly

**Move head ring at least 2 hourly****Rotate head at least every 4 hours**

- ☐ Contact prone team 30mins ahead of time
- ☐ Ensure all equipment available

**Turn supine after 16 hours**

- ☐ Stop feed 1 hour ahead of time
- ☐ Contact prone team 30mins ahead of time

**FOLLOW DOFFING PROTOCOL ON EXIT**

## PREPARE

### Ensure PPE correctly applied

Airway and Lines staff to wear visors

Team (6)  
Airway - Anaesthetist/Intensivist  
Lines - Anaesthetic/ICU nurse  
Turning - 4 staff members

### PREPARE PATIENT

- Slide sheet on bed
- Preoxygenate
- Deep sedation
- Consider paralysis
- Increase vasopressors
- Remove gown & ECG dots
- Manual aspirate of NG
- Disconnect and cap art line, remove SpO2 probe
- Arms against body palms in.

### PLACE SHEET OVER PATIENT

- Ensure 4 corners match
- Burrito roll edges close to patient

### CHECK CONNECTIONS

- Ensure tube secured opposite side to ventilator
- Ensure all ventilator connections secure
- Ensure lines free

## REVIEW AND CONFIRM PLAN

## PROCEDURE

### COMMAND READY - BRACE - MOVE

- Move to edge of bed
- Move 1/2 body width off bed
- Move up so head clear of top of bed
- Remove pillow/headring
- Ensure lines and tubing free

### COMMAND READY - BRACE - TURN

- Turn patient 90 degrees
- Turn patient supine

### COMMAND READY - BRACE - MOVE

- Move down bed
- Head-ring/pillow into place
- Un-tape eyes
- Check lines and tubes

- Reattach monitors

- Commence feed once stable

### Prepare to prone after 8 hours

- Stop feed 1 hour ahead of time
- Contact prone team 30mins ahead of time
- Ensure all equipment available

## FOLLOW DOFFING PROTOCOL ON EXIT

# SUPINATION

## Initial phase - deep sedation - Target RASS < -4

Propofol 100mg/hr  
Morphine 5mg/hr

**Haemodynamically Stable  
Improving Oxygenation**

RASS -2 - -3

**Haemodynamically Unstable**

add/substitute  
Midazolam 5mg/hr

## Daily Sedation Break

## Anticipate Delirium

Quetiapine 25mg BD  
Dexmedetomidine 0.2-1.4 mcg/kg/hr

Richmond Agitation and Sedation Scale (RASS)		
+4	Combative	violent, immediate danger to staff
+3	Very Agitated	Pulls or removes tube(s) or catheter(s); aggressive
+2	Agitated	Frequent non-purposeful movement, fights ventilator
+1	Restless	Anxious, apprehensive but movements not aggressive or vigorous
0	Alert & calm	
-1	Drowsy	Not fully alert, but has sustained awakening to voice (eye opening & contact ≥ 10 sec)
-2	Light sedation	Briefly awakens to voice (eye opening & contact < 10 sec)
-3	Moderate sedation	Movement or eye-opening to voice (but no eye contact)
-4	Deep sedation	No response to voice, but movement or eye opening to <i>physical</i> stimulation
-5	Unarousable	No response to voice or <i>physical</i> stimulation

## Target MAP >65mmHg

### Noradrenaline

If noradrenaline >25mcg/min then consider adding a second agent to achieve MAP

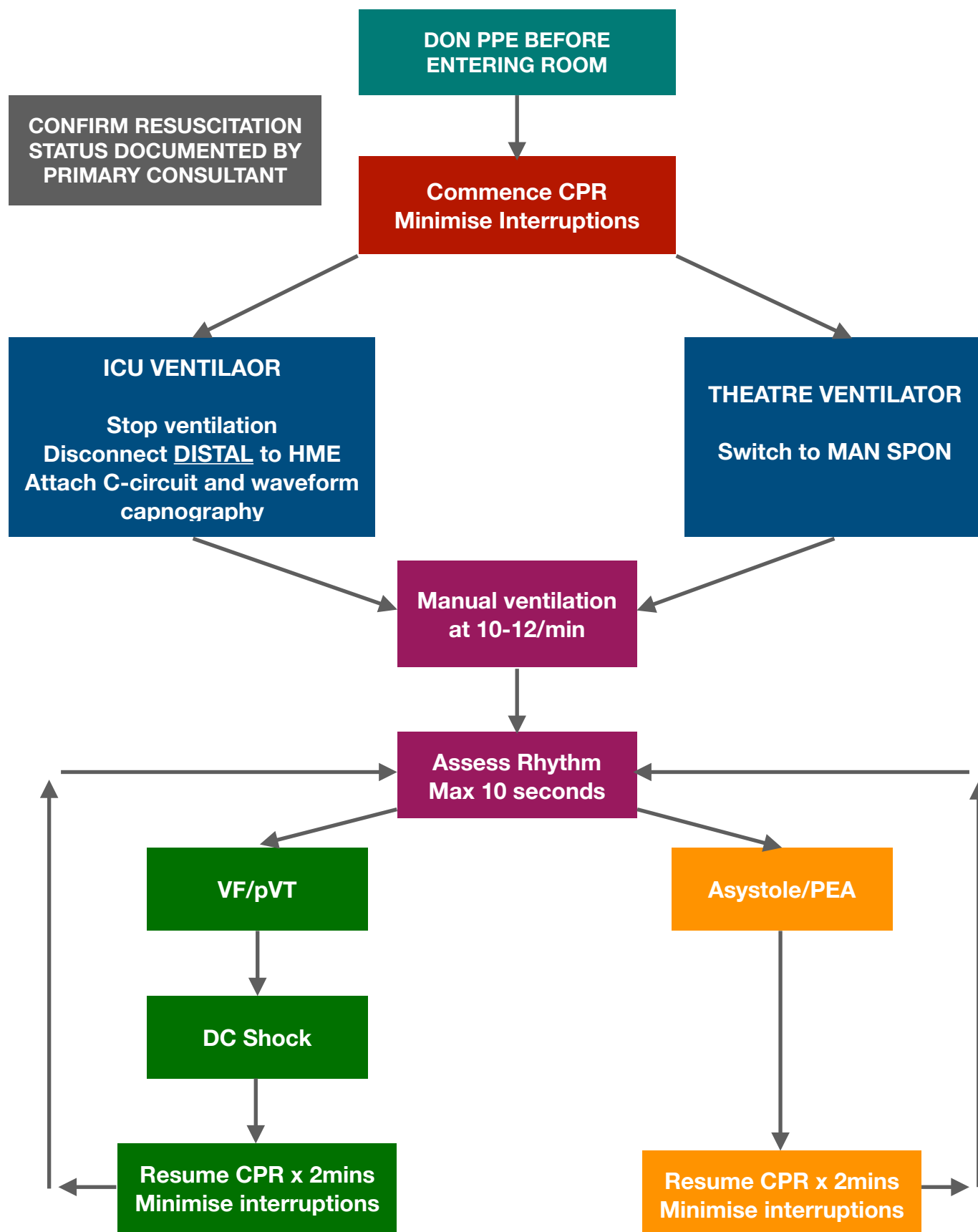
- Vasopressin
- Adrenaline

### Fluids

Do not routinely prescribe maintenance fluids if tolerating NG feeds.

Aim for neutral or negative fluid balance every 24 hours - depending on renal function, measurement of perfusion and insensible losses.

Diuretics as required



Ensure high quality CPR with minimal interruptions  
Adrenaline 1mg every 3-5mins  
Amiodarone 300mg after 3rd shock  
Consider adrenaline infusion

Hypoxia	Thrombosis
Hypovolaemia	Tension PTX
Hypo/ Hyperkalaemia	Tamponade
Hypothermia	Toxins

**Inside the room**

1. Senior anaesthetist/intensivist
2. Physician for iv access and airway assistance (may be anaesthetics or other)
3. ICU Nurse to administer medications and energy
4. Staff nurse to do CPR (1)
5. Staff nurse to do CPR (2) – First responder(s)

**In anteroom**

1. Staff nurse in PPE

They should:

- provide support if someone has to leave the room
- be ready to get whatever the team inside needs
- facilitate communication
- observe for breaches in protection
- relieve personnel inside the room to minimise risk of safety breaches when fatigued

**Outside the room**

1. RUNNER (staff nurse) to assist with supply/ equipment

**Donning should be carried out quickly but meticulously**

- If multiple individuals arrive at the same time, **priority for donning and entering the room should be given to senior anaesthetist and ICU nurse**
  - Members of the team initially staying outside the room (e.g., back-up staff nurse and runner), should **help with donning (e.g. tie gowns) and assessing for breaches**
1. Put personal items (stethoscope, jewellery, clipboard, watch, pagers) in specific bag available in COVID-19 tool bag
  2. Don PPE as per guidelines for aerosolized procedures
  3. Have member of the code blue team special to assess for breaches prior to entering room

**INSIDE THE ROOM / DURING THE CODE**

- First responder continues to provide CPR
- First two to enter the room: senior anaesthetist and the ICU nurse with arrest cart (unless already inside the room), unless others already present and properly protected
- ICU nurse immediately connects patient to defibrillator for rhythm analysis if not done already
- Defibrillate if indicated
- No equipment can leave the room until the end of the arrest and without appropriate handling

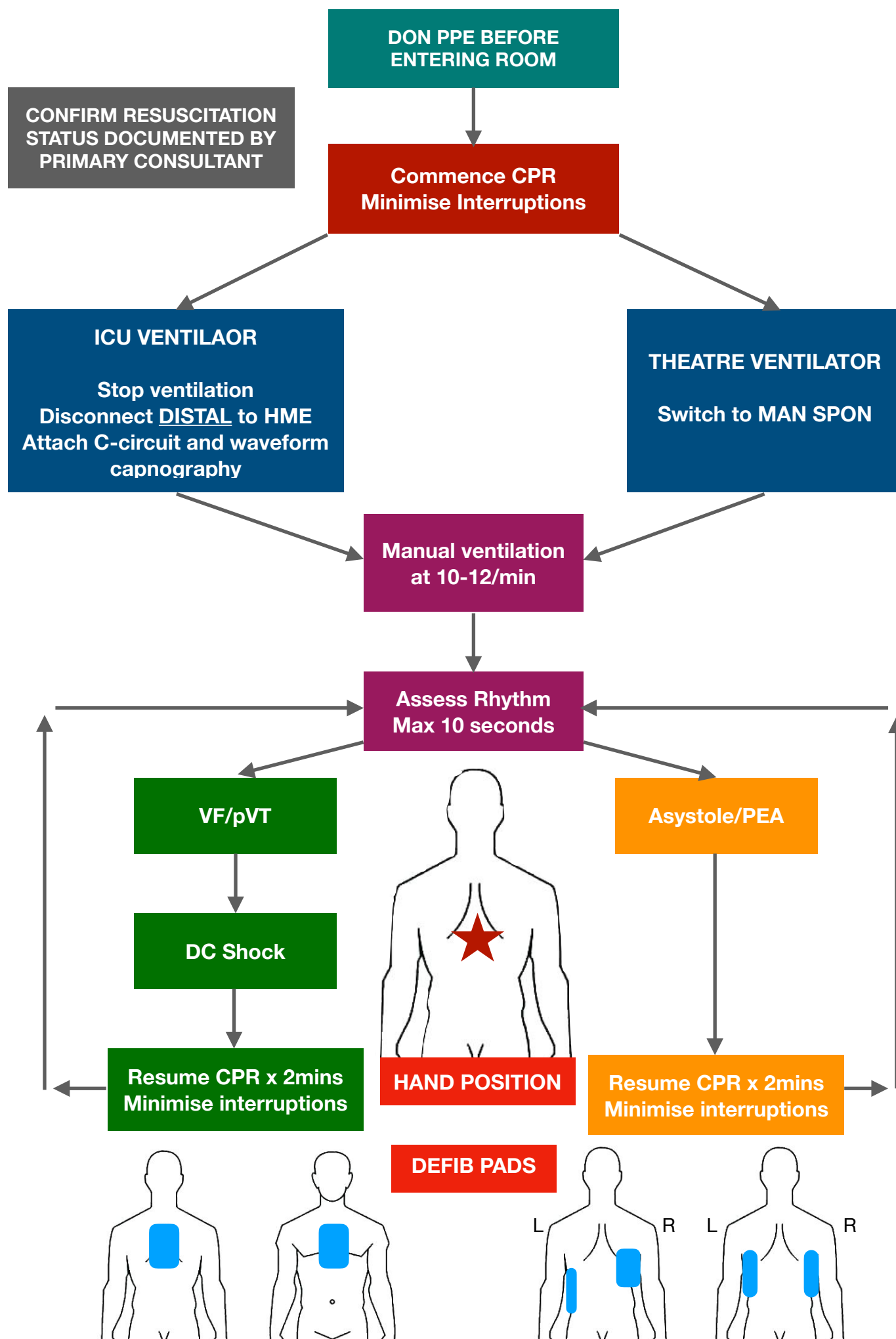
**BEFORE LEAVING THE ROOM**

- **Plan transport** if needed. Team members who will be in contact with the patient during transport must then put on new, clean PPEs prior to transport.
- All **non-disposable equipment must be wiped, placed into a clear biohazard bag** in the room and tied
- **Disposable equipment must be discarded**
- **Put arrest record** into sleeve sheet and wipe it

**DOFFING**

**-DO NOT RUSH - Use doffing guidelines**

**-Anyone who is unwell, has had equipment failure, or likely self-contaminated is the first to doff and exit**





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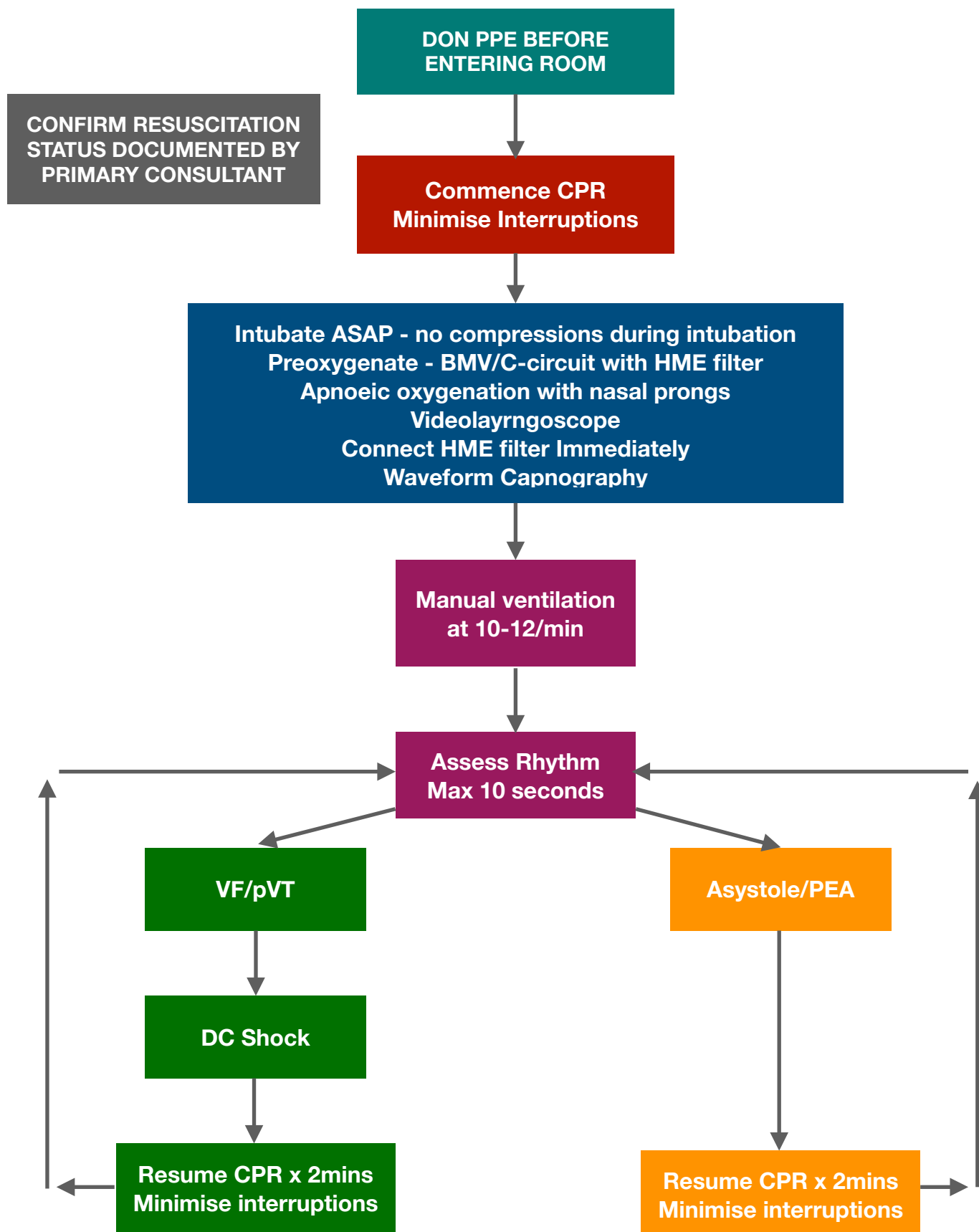
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## PREPARE

Nasal Cannula at 6L/min with covering surgical mask  
Consider non-rebreather with covering surgical mask  
**DO NOT USE HFNO OR NIV**

## EQUIPMENT

- Monitor from ICU
- Full O2 cylinder
- Wrap O2 cylinder in plastic bag and place on bed
- Wipe down external areas of patient's bed with 70% alcohol wipe - staff doing this should wear PPE
- Patient notes

## PATIENT

- Confirm working iv access
- Attach monitor and explain process
- Cover patient with fresh sheet

## PERSONNEL

- 2 staff to push bed
- 2 staff to open doors
- 1 spills officer
- 1 staff to clear route

**ALL STAFF WEARING PPE**

**ALLOCATE AND REVIEW  
ROLES FOR TRANSPORT  
TEAM**

**IF ANY CONCERNS DURING  
TRANSFER CONTACT ICU  
CONSULTANT/REGISTRAR**

Plan route with transport team

**CONFIRM THAT ICU ARE READY TO RECEIVE  
PATIENT  
DO NOT LEAVE WARD UNTIL THIS IS CONFIRMED**

Designated staff must clear pathway for transport team

Keep all doors open along route  
Spills officer close doors once no longer needed

In ICU all staff receiving patient wear full PPE  
If transferring to isolation room close door once patient inside  
Transfer directly onto ICU bed

Remove ward bed from room - immediate cleaning by cleaner wearing appropriate PPE

Porters change gown and gloves before cleaning O2 cylinder  
Leave face mask on until equipment clean

Handover by ward nurse to critical care nurse

Careful doffing of PPE once out of room

## PREPARE

### EQUIPMENT

#### DO NOT ROUTINELY USE TRANSPORT VENTILATOR

- ☐ Monitoring incl EtCO<sub>2</sub>
- ☐ Infusion pumps fully charged
- ☐ Ambu-bag + filter
- ☐ Emergency Transport Bag\*
- ☐ Full O<sub>2</sub> and Air cylinder on transport trolley
- ☐ Check ventilator battery life - ensure fully charged
- ☐ Wedges for doors

\*wrap in plastic before placing on bed

### DRUGS

- ☐ Spare infusions
- ☐ Emergency drugs

### PATIENT

- ☐ ID Band attached
- ☐ Stable for transfer?
- ☐ ETT Secure
- ☐ IV Access point identified
- ☐ Consent (if applicable)

### PERSONNEL

- ☐ Intensivist
- ☐ Bedside Nurse
- ☐ Porter x 2

### STAFF TO WEAR PPE 'CLEAN' RUNNER

### EMERGENCY CONTACTS

HDU	4810
ICU	2769 2494
RICU	2418 2420
REC	8613

Confirm destination, route and anticipated duration

Transfer infusion pumps to bed pole

Transfer monitor block to portable screen

Consider neuromuscular blockade

### PRE-DEPARTURE CHECK

- |  |  |
|--|--|
| <input type="checkbox"/> Patient stable                                  | <input type="checkbox"/> Plan agreed                             |
| <input type="checkbox"/> ETT secure                                      | <input type="checkbox"/> Route Cleared                           |
| <input type="checkbox"/> All ETT and ventilator connection points secure | <input type="checkbox"/> Ventilator unplugged and fully charged  |
| <input type="checkbox"/> IV Access                                       | <input type="checkbox"/> Consultant Intensivist and CNM informed |
| <input type="checkbox"/> Equipment checked                               |  |

**DO NOT LEAVE UNTIL RECEIVING LOCATION AVAILABLE**

Runner to hold open all doors with wedges

Proceed directly to destination

If transfer to CT scanner keep patient's bed in room.

Repeat sequence for transfer back to critical care (if applicable)

## Guidelines on feeding rate aims for adults not at refeeding syndrome risk, when enteral or parenteral feeding is commenced out-of-hours

### ICU Enteral Nutrition (EN):

- Standard ICU feed: Nutrison Protein Plus
- For obese: Nutrison Protein Intense
- AKI/CKD/ESKD: If CVVH: Protein Plus  
If no CVVH: Concentrated or Nepro HP (lowest K<sup>+</sup> feed)

### Suggested EN rate aims for ICU patients not at refeeding risk:

Start at 20ml/hr and increase as below:

Feed	Rate aim for men ml/hr				Rate aim for women ml/hr			
	Day 1	Day 2	Day 3	Day 4	Day 1	Day 2	Day 3	Day 4
Nutrison Protein Plus	20 x 12h 30 x 12h	35	45	55	20 x 12h 30 x 12h	35	40	50
Nutrison Protein	20 x 12h 30 x 12h	35	40	50	20 x 12h 30 x 12h	35	40	50
Concentrated	20 x 24h	25	30	35	20 x 24h	25	25	30
Nepro HP	20 x 24h	30	35	40	20 x 24h	25	30	35

Days 1-3: Provides  $\leq 20$ kcal/kg for men of  $\geq 70$ kg and women of  $\geq 60$ kg.

Day 4 gives approx. 25kcal/kg in 70kg man or 60kg woman.

### ICU Parenteral Nutrition (PN):

- Standard ICU PN: Regimen G
- AKI/CKD/ESKD: If CVVH: Regimen G  
If no CVVH: Regimen D

Give Cernevit IV for first 3 days.

### Suggested PN rates for ICU patients not at refeeding risk:

Feed	Rate aim for normal or overweight men and women who are not at refeeding risk				Characteristics
	Day 1	Day 2	Day 3	Day 4	
Regimen G	45ml/hr	55ml/hr	65ml/hr	75 ml/hr	Lower glucose, higher nitrogen, lower fat
Regimen D	30ml/hr	35 ml/hr	40ml/hr	45ml/hr	Low electrolyte (Na, K <sup>+</sup> , PO <sub>4</sub> ), low volume

Day 1 provides approximately 950kcal; Day 2 provides approximately 1150kcal.

Day 3 provides approximately 1350kcal; Day 4 provides approximately 1550kcal.

Undernourished patients are at risk of refeeding syndrome. Giving patients at risk of refeeding syndrome too much too soon can lead to:

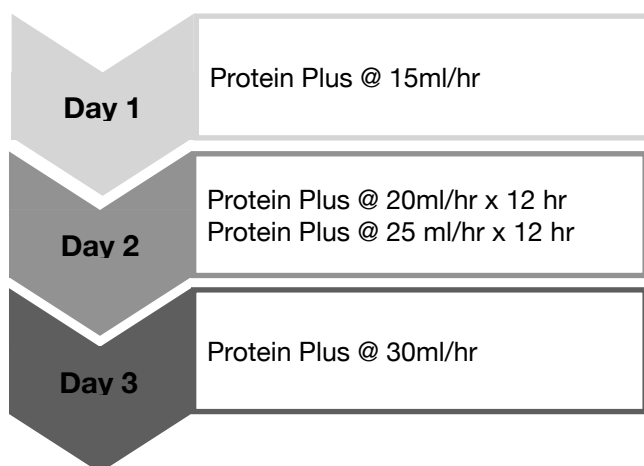
- Hypophosphataemia
- Hypokalaemia
- Hypomagnesaemia
- Fluid balance abnormalities
- Altered Glucose Metabolism
- Vitamin Deficiency

Principles of management:

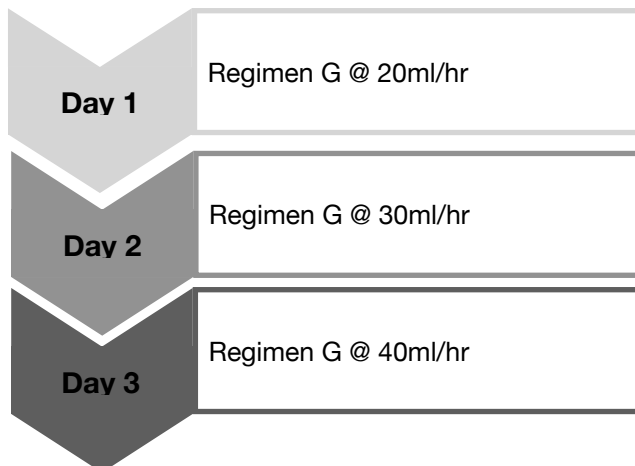
- **Start on low rate feeding and build up *gradually* (see below).**
- **Commence Pabrinex® 1&2 one pair daily IV for 3 days.**
- **Commence Berocca Performance once daily enterally, or Cernevit once daily IV if PN.**

Patients at risk of refeeding syndrome ((NICE guidelines 2006 and Friedli et al. 2018):		
Major risk factors	Minor risk factors	Very high risk factors
BMI <16 kg/m <sup>2</sup>	BMI <18.5 kg/m <sup>2</sup>	BMI <14kg/m <sup>2</sup>
Unintentional weight loss >15% in 3–6 months	Unintentional weight loss >10% in 3–6 months	Unintentional weight loss >20% in 3–6 months
Little/no nutritional intake for >10 days	Little/no nutritional intake for >5 days	Little/no nutritional intake for >15 days
Low levels of K <sup>+</sup> , PO <sub>4</sub> , or Mg prior to feeding	History of alcohol abuse, or drugs including chemotherapy	
Specific patient populations at high risk		
Hunger strike, severe dieting, history of bariatric surgery, short bowel syndrome, tumour patients, frail elderly patients with chronic debilitating disease		
<b>High risk</b> = 1 major or 2 minor risk factors <b>Low risk</b> = 1 minor risk factor		
Risk category		Nutrition aim
<b>High refeeding risk</b>		Start at 10-15kcal/kg/24hr.
<b>Low refeeding risk</b>		Start at 15-20kcal/kg/24hr.
<b>Very high refeeding risk e.g. anorexia nervosa</b>		Start at 5-10kcal/kg/24hr.

## Enteral Nutrition



## Parenteral Nutrition



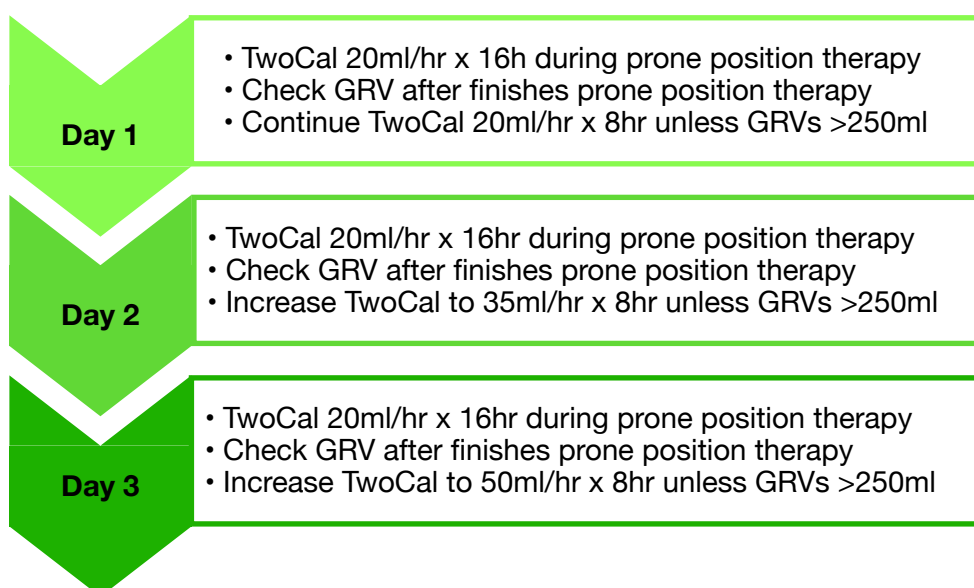
If hyperkalemia substitute Regimen D.  
D1 20ml/hr, D2 25ml/hr, D3, 30ml/hr

For very high risk patients - halve the rates above

## Aims

- Commence early enteral feeding: start within 24-48h once haemodynamically stable (ESPEN 2009, ASPEN 2016, Canadian Practice Guidelines 2015).
- For medical patients with single organ failure – recommend avoid checking gastric aspirates/residual volumes (GRVs) to lessen the risk of aerosol spread (ASPEN 2016).
- Continue to check GRVs for surgical patients, MOF patients, patients who have vomited in last 24h and intestinal failure patients.
- Consider prokinetic use on a case-by-case basis if intolerance is demonstrated or expected.

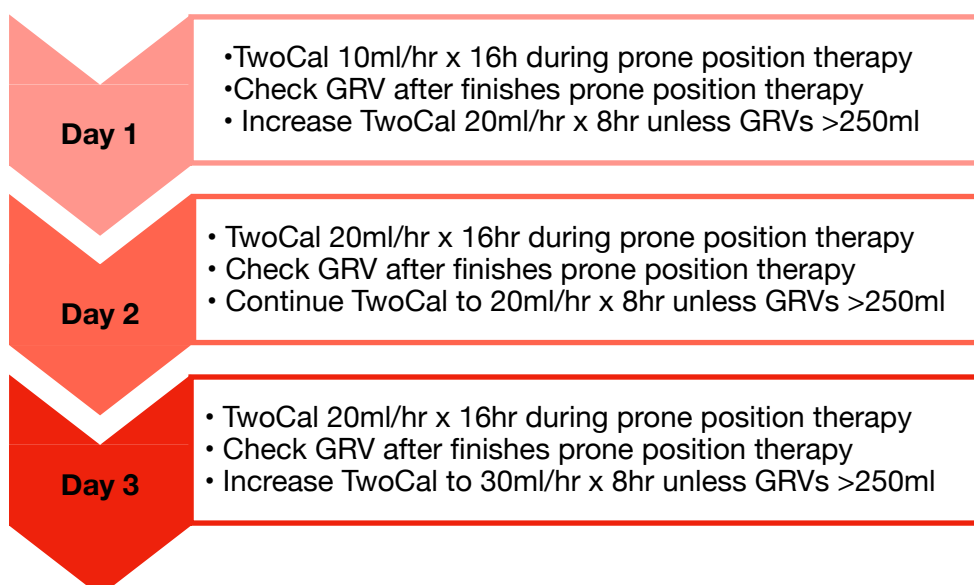
### If no risk of refeeding syndrome



#### Note:

- Can also substitute Nutrison Concentrated for TwoCal in Figure 1.
- Day 1 gives 960kcal & 40g protein; Day 2 gives 1200kcal & 50g protein; Day 3 gives 1440kcal & 60g protein.
- Concurrent propofol infusion will give extra kcal and fat. Monitor triglyceride level.

### If at **HIGH RISK** of refeeding syndrome



#### Note:

- Day 1 gives 640kcal & 26g protein; Day 2 gives 960kcal & 40g protein; Day 3 gives 1120kcal & 47g protein.
- Give IV Pabrinex I and II od x 3/7, and NG multivitamin od per Hospital Refeeding Syndrome Guideline.



Caring for critically ill patients can be a stressful experience for staff, particularly in new or unfamiliar environments. We have compiled some practical tips and resources to help you, and your colleagues, look after your mental and physical wellbeing during the weeks ahead.

Keep a routine - make sure you eat healthily and stay hydrated. Take your breaks. Try to exercise and get sufficient rest in between shifts.

Stay in touch with friends and family.

Check out [www.gov.ie](http://www.gov.ie) for factual updates, avoid continuously checking news sites or social media as the flow of information may be overwhelming.

### Employee Assistance Counselling Service

The Employee Assistance Counselling Service is provided by the HSE to support employees at a time of difficulty in their personal or professional lives.

The service can be accessed confidentially without having to go through HR or occupational health. Between 4 and 6 sessions are provided free of charge.

The service uses trained counsellors based in numerous locations nationwide to ensure it is convenient for staff members.

Contact details and more information available on [hse.ie](http://hse.ie) or via QR code



### YourMentalHealth.ie

Developed by the HSE [yourmentalhealth.ie](http://yourmentalhealth.ie) contains a wealth of information on all things mental health.

Resources include information on mental health conditions and how to support a friend or family member who is struggling with their mental health.

### Practitioner Health Matters

The practitioner health matters programme provides support to doctors, pharmacists and dentists who are struggling with stress, anxiety, burnout or other mental health issues such as substance misuse and addiction.

The service is designed specifically to deal with healthcare providers and so is familiar with the common issues they face, and how to support them through these issues.

The service is fully confidential and free at the point of access for staff.

(01) 297-0356 [confidential@practitionerhealth.ie](mailto:confidential@practitionerhealth.ie) <https://practitionerhealth.ie/>